

51.2-2

✓ 51.01.03.03

**ELI LILLY INDUSTRIES, INC.**

KM. 12.6 65TH, INFANTRY AVE.  
CAROLINA, PUERTO RICO

G.P.O. BOX 71325  
SAN JUAN, PUERTO RICO 00936

KM. 146.7 STATE ROAD NO. 2  
MAYAGUEZ, PUERTO RICO

P.O. BOX 1748  
MAYAGUEZ, PUERTO RICO 00709

October 1, 1985 ✓

Mr. John Gorman  
Environmental Engineer  
New Jersey/Caribbean Permit Section  
Solid Waste Branch  
EPA Region II  
26 Federal Plaza  
New York, New York 00278

Dear Mr. Gorman:

Re: Eli Lilly Industries, Inc.  
Mayaguez, Puerto Rico  
EPA ID No. PRD091024786

Eli Lilly Industries, Inc. (Lilly) received a request for additional information dated July 23, 1985, from the U.S. Environmental Protection Agency, Region II concerning Lilly's Part B Permit Application for the referenced facility. Lilly has developed responses to the questions raised which are enclosed with this letter (two copies).

The responses are provided in the order presented in the EPA request. Information provided in the responses to questions 1, 2, and 3 was obtained from Brule, the incinerator manufacturer, after providing Brule with the anticipated composition of the test burn waste mixtures and the auxiliary fuel analysis.

Eli Lilly Industries, Inc., in developing the Part B Application for the Mayaguez facility utilized the experience that its parent company Eli Lilly and Company had obtained from discussions and agreements between Eli Lilly and Company and EPA Region V for similar applications submitted for facilities in Indiana. Eli Lilly Inc. patterned the Mayaguez Part B Application after these Indiana facility applications.

Lilly realized that there may be differences between Region V and Region II's interpretations as to the format and type of technical information necessary to evaluate the Mayaguez Part B application. However, Lilly is available at your convenience to meet with you and discuss any additional questions or comments you might have regarding this application of the information being submitted here.

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OCTOBER 1, 1985  
MR. JOHN GORMAN  
EPA REGION II ....  
PAGE -2-

Due to personnel changes at this facility, future correspondence regarding this application should be addressed to Mr. José Juan Rivera at the same address.

Sincerely,

  
José Juan Rivera

rb

xc: Mr. Richard A. Baker  
Chief, Permits Administration Branch  
U.S. Environmental Protection Agency, Region II  
26 Federal Plaza  
New York, New York 10278

Mr. Weems Clevenger  
Director, Caribbean Field Office  
U.S. Environmental Protection Agency  
P.O. Box 792  
San Juan, Puerto Rico 00902

Mr. Yazmin López  
Acting Chief, Permit and Engineering Section  
Environmental Quality Board

Mr. M. L. Esarey  
Mr. D. L. Sullivan

ATTACHMENT I  
RESPONSES TO EPA REGION II COMMENTS  
ELI LILLY INDUSTRIES, INC.  
MAYAGUEZ, PUERTO RICO

QUESTION 1

- A) TYPE IN BRULE RESPONSE 1 A.
- B) TYPE IN BRULE RESPONSE 1 B.
- C) TYPE IN BRULE RESPONSE 1 C.
- D) TYPE IN BRULE RESPONSE 1 D.
- E) THIS INFORMATION WAS PROVIDED BY THE INCINERATOR MANUFACTURER BASED UPON THEIR ENGINEERING KNOWLEDGE AND EXPERIENCE WITH THIS INCINERATOR DESIGN AND MODEL.

EMISSION RATES:

- PARTICULATES:	.48	.70	LB/HR
- HCL	2.9	3.1	LB/HR
- METHYLENE CHLORIDE	.0029	.0031	LB/HR
- CARBON TEYRACHLORIDE:	.39	- 041	LB/HR

INCINERATOR POHC DESTRUCTION EFFICIENCY 99.99%

HCL SCRUBBING EFFICIENCY 99%

PARTICULATE EMISSIONS VARIABLE WITH PARTICLE SIZE DISTRIBUTION

QUESTION 2

TYPE IN BRULE RESPONSE 2

QUESTION 3

TYPE IN BRULE RESPONSE 3 A & B

QUESTION 4

ELI LILLY INDUSTRIES, INC. ANTICIPATES ACHIEVING CO LEVELS OF LESS THAN 100 PPM AVERAGE AND 400 PPM MAXIMUM DURING THE TEST BURN AND STILL DEMONSTRATE THE REQUIRED REMOVAL EFFICIENCIES.

QUESTION 5

THE LOCATION OF THE TEMPERATURE CONTROL THERMOCOUPLE IS NOTED ON THE REVISED FIGURED D-2 ATTACHED.

QUESTION 6

- A) ELI LILLY INDUSTRIES, INC. IS NOT AWARE OF ANY ACCURATE METHOD OF CONTINUOUSLY MONITORING COMBUSTION GAS VELOCITY IN THE COMBUSTION GAS VELOCITY DIRECTLY IN THE INCINERATOR. LILLY WILL DETERMINE THIS VALUE CALCULATION FROM THE COMBUSTION AIR FLOWRATES.

DURING NORMAL OPERATION, COMBUSTION AIR IS VARIED TO MAINTAIN A LEVEL OF EXCESS OXYGEN NECESSARY TO ACHIEVE COMPLETE COMBUSTION. COMBUSTION AIR FLOWRATES VARIES WITH CHANGES IN WASTE FEEDRATE AND WASTE COMPOSITION. AN ACCEPTABLE RANGE OF HIGH AND LOW COMBUSTION AIR FLOWRATES WILL BE ESTABLISHED BASED UPON THE TRIAL BURN RESULTS. AUTOMATIC WASTE FEED CUTOFFS FROM THE COMBUSTION GAS FLOW MONITORS WILL BE SET AT THESE RANGE LIMITS.

- B) THE TABLE C-3 NOTED TOWARDS THE BOTTOM OF PAGE D-21 SHOULD READ TABLE C-4. THE WORST CASE WASTE MIXTURE FOR THE TRIAL BURN IS FOUND IN TABLE C-4 PAGE C-10.
- C) ELI LILLY INDUSTRIES, INC. HAS UTILIZED THE EXPERIENCE GAINED BY ELI LILLY AND COMPANY FROM TEST BURN PROGRAMS AGREED TO BY EPA REGION V AND LILLY. LILLY BELIEVES THAT A TEST BURN SAMPLING RUN TIME OF 60 MINUTES IS ADEQUATE. HOWEVER, EPA REGION V HAD REQUESTED FOR THE INDIANA FACILITIES THAT THE ORGANICS SAMPLING RUN TIME RANGE BE SET BETWEEN 120-240 MINUTES. LILLY HAS AGREED TO INCORPORATE THIS TEST BURN SAMPLING REQUIREMENT IN THE MAYAGUEZ TEST BURN PROGRAM. THE SAMPLING RUN TIME RANGE OF 60 MINUTES FOUND ON PAGE 3 OF APPENDIX I IS FOR PARTICULATES AND HCL ONLY.
- D) ALTHOUGH BOTH TABLES INDICATES DIFFERENT WASTE FLOWRATES, THE FIGURES ONLY SHOWS APPROXIMATELY QUANTITIES. THE TRIAL BURN WILL BE CONDUCTED AT THE WORST POSSIBLE OPERATION CONDITION (MAY FLOW & MAX. CONCENTRATIONS OF POHC). HOWEVER, THE SET POINT ARE ADJUSTABLE TO THE CONDITIONS ESTABLISHED BY THE TRIAL BURN AND KEPT FOR THE RUTINARY OPERATIONS.
- E) TABLE F-2 SHOWS THE FREQUENCY INSPECTION OF THE AREAS, STRUCTURES AND EQUIPMENT WHEN IT HAS SOMETHING TO DO WITH HAZARDOUS WASTE. THE WASTE CUT-OFF SYSTEM WILL BE INSPECTED IN A DAILY BASIS FOR THE ASSURANCE OF THE PROPER OPERATION OF THE EQUIPMENTS AND INSTRUMENTATION. THE TEXT INFORMATION IN SECTION F-2b(5) STATES A MORE SOPHISTICATED INSPECTION WHICH INCLUDES A SIGNAL SIMULATION AND CALIBRATION OF THE INSTRUMENTATION.

QUESTION 7

- A) ELI LILLY INDUSTRIES, INC. WILL PERFORM AT LEAST ONE TEST FOR THE AUTOMATIC WASTE FEED CUT-OFF SYSTEM DURING THE TRIAL BURN TESTING PERIOD. THE TEST WILL BE ACCOMPLISHED FOR INDIVIDUAL PARAMETERS SUCH AS HIGH CO CONCENTRATIONS, HIGH COMBUSTION GAS VELOCITY AND LOW COMBUSTION TEMPERATURE.

QUESTION 8

ELI LILLY INDUSTRIES, INC. ONLY INCINERATES WASTE GENERATED ON SITE OR WASTE FROM OTHER SIMILAR LILLY PUERTO RICO MANUFACTURING PROCESSES. THESE PROCESSES ARE SIMILAR IN THAT THE WASTES PRODUCED FOR INCINERATION ARE HAZARDOUS BECAUSE THEY CONTAIN THE SAME FAMILY OF SPENT SOLVENTS AS THOSE PRESENTED IN THE PART B APPLICATION WASTE ANALYSIS. ALTHOUGH THE CONCENTRATION OR PERCENTAGE RANGE OF EACH WASTE SOLVENT MAY VARY DUE TO PROCESS OPERATIONS, THE CONSTITUENTS AND COMPOSITION OF THE WASTE BEING INCINERATED WILL REMAIN CONSISTENT.

TO VERIFY THIS WASTE CONSISTANCY, LILLY'S WASTE ANALYSIS PROGRAM IS TO CONDUCT A QUARTERLY DETAILED CONSTITUENT ANALYSIS, INCLUDING APPENDIX VIII CONSTITUENTS BELIEVED PRESENT, OF WASTE COMPOSITES OF PRIMARY AND SECONDARY WASTE BURNED DURING THAT QUARTER. THE 8-DAY ROTATION SAMPLING AND ANALYSIS PROGRAM IN THE WASTE ANALYSIS PLAN WAS DEVELOPED TO PROVIDE EPA AND LILLY WITH THE OPERATIONAL INFORMATION TO VERIFY THAT THE WASTE BEING BURNED DOES NOT EXCEED THE LIMITS OF THE "WORST CASE TEST MIXTURE" THAT WAS USED DURING THE TEST BURN TO DEMONSTRATE INCINERATOR PERFORMANCE.

LILLY BELIEVES THAT FOR THE SIZE OF THIS INCINERATOR AND THE AMOUNT OF WASTE GENERATED FROM THESE MANUFACTURING OPERATIONS THE MAYAGUEZ PART B ANALYSIS PLAN IS ADEQUATE TO PROVIDE THE VERIFICATION THAT THE INCINERATOR IS ACHIEVING THE REQUIRED DESTRUCTION REMOVAL EFFICIENCIES FOR THE WASTE BEING INCINERATED. LILLY DOES NOT BELIEVE THAT ANY ADDITIONAL CONSTITUENT MONITORING ON THE 8-DAY ROTATION IS NECESSARY.



# BRULÉ INCINERATORS

DIVISION OF BRULÉ C. E. & E., INC.  
13920 South Western Avenue  
P.O. Box 35, Blue Island, Illinois 60406

Telephone: 312/388-7900  
Cable Address: BRUINCIN  
Telex 25-3287

®

September 20, 1985

Eli Lilly and Company  
307 East McCarty Street  
Indianapolis, IN 46285

Attn: Mr. Michael L. Esarey

Re: Letter/Questions of  
8/8/85

Dear Mr. Esarey:

As per your letter of 8/8/85 enclosed please find the answers to the questions pertaining to the Incinerator Trial Burn.

If you require any further information, please contact our office direct.

Yours truly,

BRULÉ C. E. & E., INC.  
BRULÉ ("BRU-LAY") INCINERATORS



R. L. Devin

RLD/bla

Enclosures



## BRULÉ ("BRU-LAY") INCINERATORS

Eli Lilly and Company  
Indianapolis, IN  
September 20, 1985  
Page 3

1. b. Ultimate Analysis of Supplemental Fuel: (2)

-Basis: #5 Fuel Oil; Gravity  $^{\circ}\text{API} = 16$  (3)

S.G. = .9593, 7.99 lb/gal, 18,840 Btu/lb Gross

<u>Component</u>	<u>Wgt. %</u>
H <sub>2</sub>	11.611
C	87.389
S	1.000

(2) Firing Rate to be modulated off of Temperature Controller.

(3) 'Basis' to be confirmed by Eli Lilly.

1. c. Steam Utilization Rate: 50-60 lb/hr @ 50 PSIG sat.

1. d. Maximum Achievable Temperature:

-Basis: Full Burner Capacity Input - 12 MM Btu/hr, and  
2.5 GPM Primary Waste

-2200 $^{\circ}$ -2300 $^{\circ}$ F (4)

-Combustion Gas Flow Rate: 20,000-20,800 lb/hr

-Excess Air Rate: 75-85%

-Residence Time:  $\approx$  2.3 seconds @ 1800 $^{\circ}$ F

-Superficial Velocity:  $\approx$  8 FPS

-Turbulence: Re = 50-60,000

(4) Maximum achievable temperature dependant upon % Excess  
Combustion Air Supplied.

BRULÉ ("BRU-LAY") INCINERATORS

Eli Lilly and Company  
Indianapolis, IN  
September 20, 1985  
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1. e. Emission Rates: (5)

- Particulates: .48 - .78 Lb/Hr
- HCL: 2.9 - 3.1 Lb/Hr
- Methylene Chloride: 1.8 - 2.0 Lb/Hr
- Carbon Tetrachloride: .4 - .5 Lb/Hr

(5) Incinerator POHC Destruction Efficiency >99%

HCL Scrubbing Efficiency  $\approx$  99%

Particulate Emissions variable with Particle Size Distribution.

2. Scrubbing System: (6)

- Water Rate: 95 GPM
- Liquid to Gas Ratio: >2:1
- Superficial Gas Velocity:  $\approx$  7.7 FPS
- Cross Sectional Area: 15.71 FT<sup>2</sup>
- Inlet Temperature: 167°F
- Residence Time: >2 seconds
- Caustic Flow Rate: Variable
- Recycled Water Rate: None (Once Through Flow of Water) (7)
- Maximum Quantity of Solids in Recyc.: N/A

(6) Packed Column Scrubber Flows.

(7) Utilizing Water - Only As Scrubbing Fluid



BRULÉ ("BRU-LAY") INCINERATORS

Eli Lilly and Company  
Indianapolis, IN  
September 20, 1985  
Page 5

3. a. Burner Details: Refer to Enclosed Drawings

Dwg. SK1000 GA - Atomizing Burner Gun

PL 5TF1006 - Parts List, Burner Internal

PL 5TF1006 - Blower Assembly

b. Burner combustion air fan range - 2300 CFM to 100 CFM.

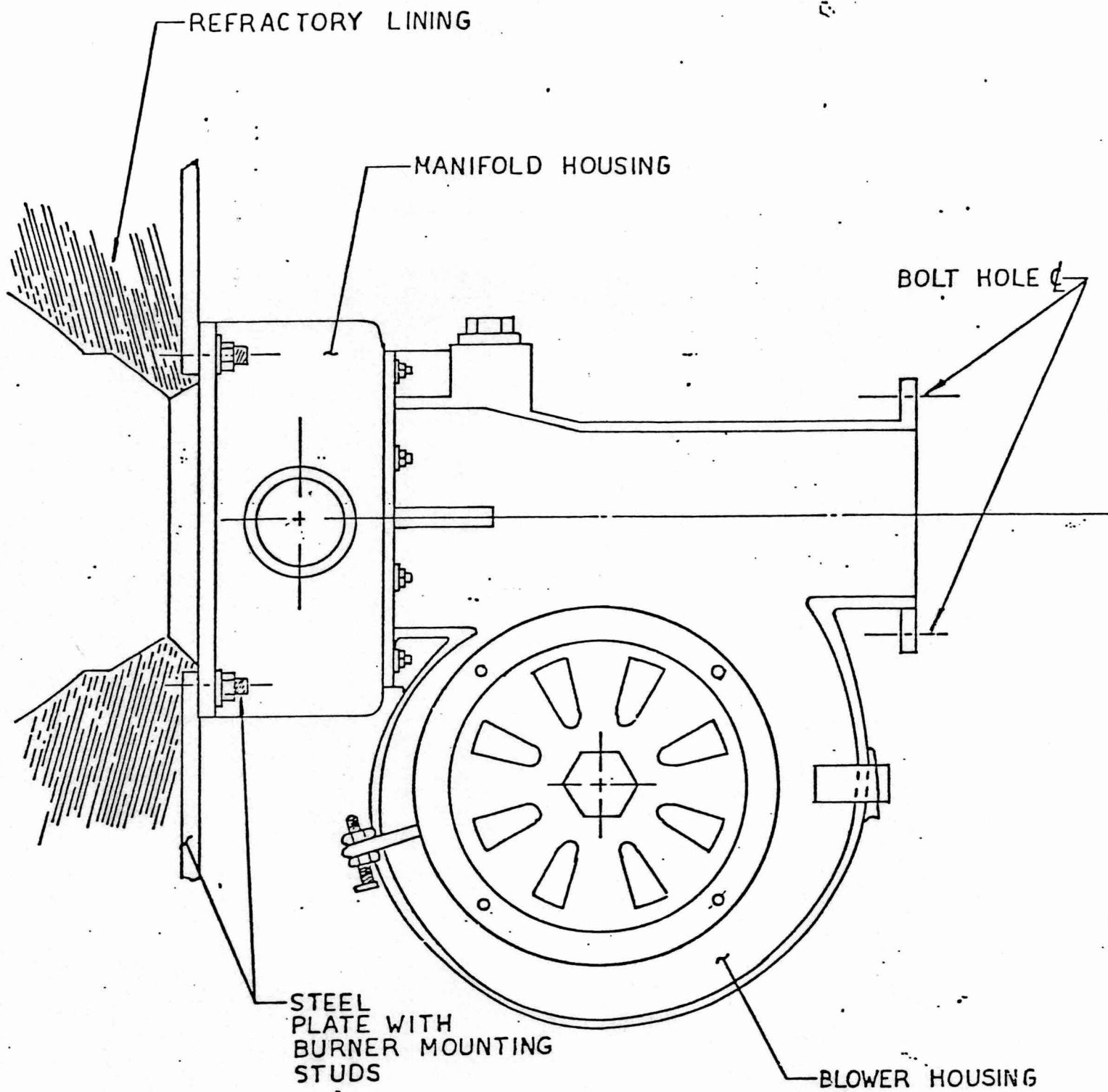
# BURNER PARTS LIST PL-9TF1000, 1001

ITEM NO.	DESCRIPTION
BI - 1	Burner Can
BI - 2	Burner Can & Gun Guide Tube Holder
BI - 3	Pilot Assembly Complete
3A	Pilot Ground Plate & Outer Tube
3B	Pilot Inner Tube
3C	Pilot Orifice
3D	Pilot Boss
BI - 4	Pilot Pipe
BI - 5	Pilot Jamb Nuts
BI - 6	Spark Electrode
BI - 7	Spark Electrode Holder
BI - 8	Spark Electrode Ignition Cable
BI - 9	Complete Internal Burner Assembly Parts BI - 1 to 7
BI - 10	Complete Gun Assembly - #1
BI - 10A	Complete Gun Assembly - #2
BI - 11	High Fire or (Hot Waste) Nozzle
BI - 12	Low Fire Nozzle
BI - 13	Waste Liquid Nozzle
BI - 14	Burner Adjustment Collars
BI - 15	Air Deflector Plate
BI - 16	Internal Assembly (burner) Mounting Plate
BI - 17	Air Register Control Mechanism
BI - 18	Burner Housing
BI - 19	Burner Blower
BI - 20	Burner Blower Motor
BI - 21	Low Fire Proving Switch
BI - 22	High Fire Proving Switch
BI - 23	Burner Air Register
BI - 24	Combustion Air Flow Switch

FOR \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CONTRACTOR \_\_\_\_\_  
 JOB No. \_\_\_\_\_

BRULE' (BRU-LAY)  
 INCINERATORS  
 BLUE ISLAND, ILLINOIS  
 (312) 388-7900

SHEET No. \_\_\_\_\_ OF \_\_\_\_\_ ATTACH  
 STD. DETAILS NO. \_\_\_\_\_  
 DRAWN BY \_\_\_\_\_ CHK'D BY \_\_\_\_\_  
 SCALE \_\_\_\_\_ DATE \_\_\_\_\_  
 SUBJECT \_\_\_\_\_  
☐ ☐



FOR \_\_\_\_\_

ADDRESS \_\_\_\_\_

CONTRACTOR \_\_\_\_\_

JOB No. \_\_\_\_\_

**BRULE' (BRU-LAY)**  
**INCINERATORS**  
**BLUE ISLAND, ILLINOIS**  
**(312) 388-7900**

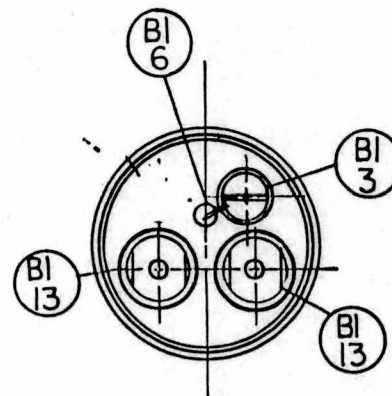
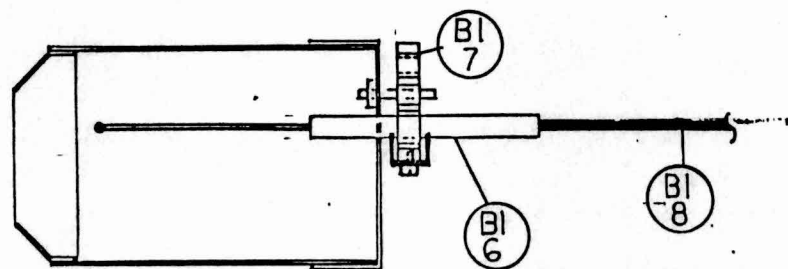
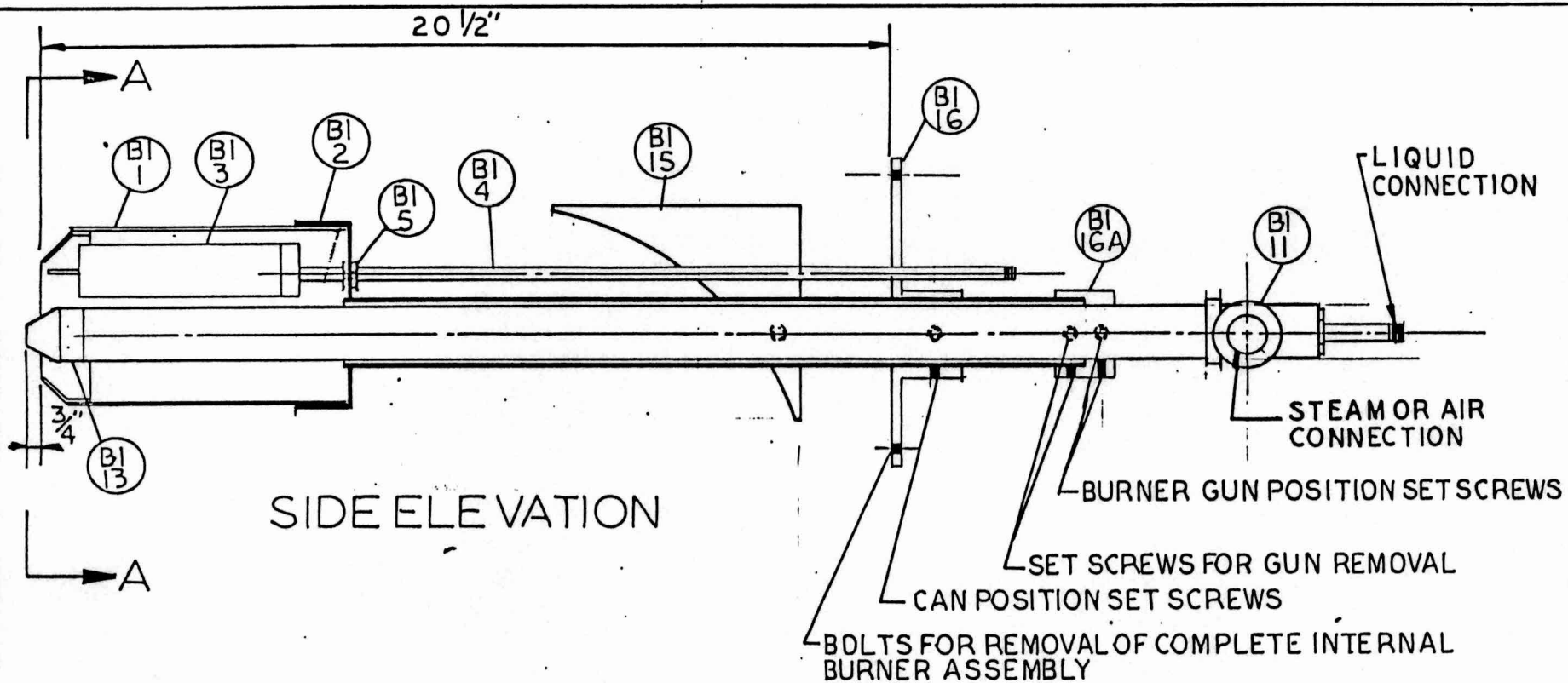
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DRAWN BY \_\_\_\_\_ CHK'D BY \_\_\_\_\_

SCALE \_\_\_\_\_ DATE \_\_\_\_\_

SUBJECT Blower Assembly

☐ ☐ PL5TF1006

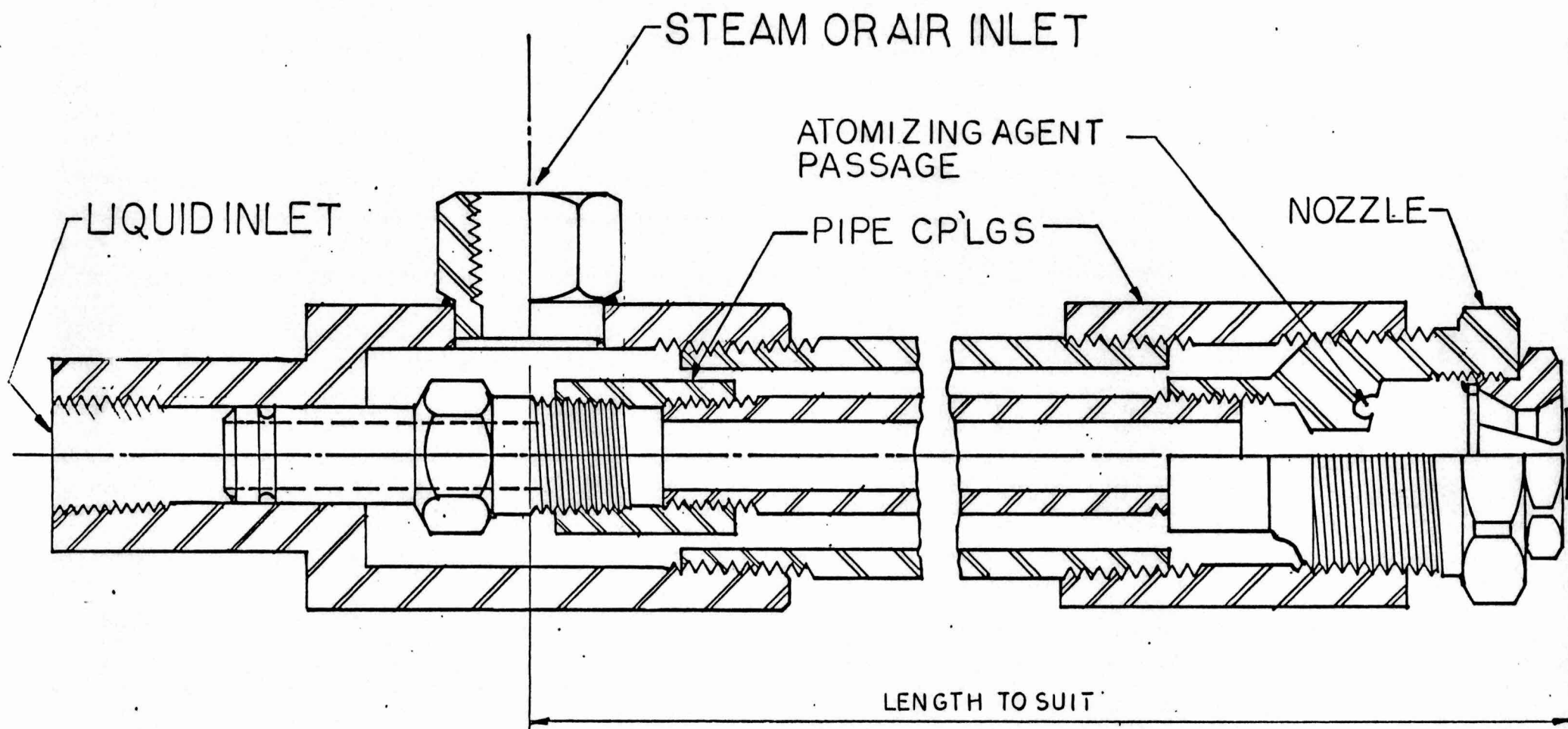


VIEW AA

ATTACH  
SHEET No. \_\_\_\_\_ OF \_\_\_\_\_ STD. DETAILS NO. \_\_\_\_\_  
DRAWN BY \_\_\_\_\_ CHK'D BY \_\_\_\_\_  
SCALE \_\_\_\_\_ DATE \_\_\_\_\_  
SUBJECT PARTS LIST BURNER INTERNAL  
☐ DP-5TF 1006

**BRULE' (BRU-LAY)**  
**INCINERATORS**  
**BLUE ISLAND, ILLINOIS**  
**(312) 388-7900**

FOR \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CONTRACTOR \_\_\_\_\_  
JOB No. \_\_\_\_\_



BRULÉ C.E. & E, INC	
OIL OR WASTE LIQUID, AIR OR STEAM ATOMING BURNER GUN	
DR. BY <i>DEW</i>	SK 1000 GA
DATE 3-17-79	

Figure D-2: Incinerator Process Control & Schematic

